

Notice of Allowability

Application No.

10/711,574

Applicant(s)

WU, HSIAO-CHE

Examiner

David Nhu

Art Unit

2818



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 9/13/05.
2. ☒ The allowed claim(s) is/are 1-17.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |



REASONS FOR ALLOWANCE

1. Claims 1-17 are allowed.
2. The following is an examiner's statement of reasons for allowance: None of the references of record teaches or suggests in claims 1, 10: providing a substrate having a patterned mask layer thereon and a deep trench therein, wherein the patterned mask layer exposes the deep trench, and the substrate has a lower electrode formed at a bottom of the deep trench, wherein an interior surface of the deep trench has a capacitor dielectric layer; removing the capacitor dielectric layer uncovered by the first conductive layer; forming a collar oxide layer on a sidewall of the deep trench uncovered by the first conductive layer; forming a trench in the substrate on one side of the second conductive layer. Wherein the trench exposes a portion of the substrate and the second conductive layer; forming a semiconductor strip in the trench to expose a portion of the substrate at the bottom portion of the trench, wherein one end of the semiconductor strip is positioned next to the second conductive layer while the other end of the semiconductor strip is positioned next to the substrate (as cited in claim 1); providing a substrate having a patterned mask layer thereon and a deep trench capacitor therein, wherein the deep trench capacitor comprises a lower electrode, an upper electrode, a capacitor dielectric layer and a collar oxide layer, and the patterned mask layer exposes the upper electrode; forming a trench in the substrate on one side of the deep trench capacitor, wherein the deep trench exposes a portion of the substrate and the upper electrode; patterning the semiconductor material layer to form a semiconductor strip and two openings exposing the substrate, wherein one end of the semiconductor strip is positioned next to the substrate; forming a conductive layer over the gate dielectric layer, wherein the conductive layer crosses

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over the semiconductor strip, and the semiconductor strip covered by the conductive layer serves as a channel region (as cited in claim 10).

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

CONCLUSION

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Tews et al (6,426,253 B1): Method of Forming a Vertically Oriented Device in an Integrated Circuit.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Nhu, (571)272-1792. The examiner can normally be reached on Monday-Friday from 7:30 AM to 5:00 PM.

The examiner's supervisor, David Nelms can be reached on (571)272-1787.

The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

David Nhu



September 16, 2005

DAVID NHU
PRIMARY EX